

What is claimed is:

1. Gripping tool for automatic laboratory machines, with
  - gripping appliances (9, 10) for gripping vessels,
  - 5 - an appliance for converting and/or transferring (42, 45) of movements, the power take-off of which is coupled with the gripping appliances (9, 10) in order to drive them,
  - a coupling appliance (49) for detachable connection with a drive appliance (78) of a tool support (66) of an automatic laboratory machine, which is
  - 10 coupled with the drive of the appliance for converting and/or transferring (42, 45) in order to drive it, and
  - a mounting appliance (35, 36) for detachable mounting of the gripping tool (1) on the tool support (66) of the automatic laboratory machine, while the coupling appliance (49) is connected with the drive appliance (78) of the tool
  - 15 support (66).
2. Gripping tool according to claim 1, in which the gripping appliances are swingably mounted gripping levers (9, 10).
- 20 3. Gripping tool according to claim 2, in which the gripping levers (9, 10) have approximately parallel grapples (11, 12) and offset driving arms (13, 14), directed towards each other, with the adjacent ends of which the drive of the appliance for converting and/or transferring (42, 45) is coupled.
- 25 4. Gripping tool according to claim 1, in which the gripping appliances (9, 10) comprise needles (15, 16) and/or liners (21, 22), directed towards each other.
5. Gripping tool according to claim 4, in which gripping appliances (9, 10) comprise protective sleeves (17, 18) equipped with springs, disposed concentrically

around the needles (15, 16), and/or liners (21, 22), disposed concentrically around the needles.

6. Gripping tool according to claim 1, which has a spring appliance (31)  
5 clamping the gripping appliances (9, 10) together.

7. Gripping tool according to claim 6, in which the spring appliance (31)  
presses the gripping appliances (9, 10) against the power take-off of the appliance  
for converting and/or transferring (42, 45).  
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8. Gripping tool according to claim 1, in which the appliance for converting  
and/or transferring (42, 45) has an axially movable, threaded nut (42) secured  
against rotation, acting on the gripping appliances (9, 10) with a front side, and a  
spindle (45), screwable in the threaded nut (42) and connected with the coupling  
15 appliance (49) in a manner secured against rotation.

9. Gripping tool according to claim 1, which comprises an appliance for  
indicating (50) the position of the gripping appliances (9, 10), which is feelable by a  
sensor (84) of the tool support (66) while the gripping tool (1) is mounted on the tool  
20 support (66).

10. Gripping tool according to claim 9, in which the appliance for indicating is a  
pin (50) fixedly connected with the threaded nut.

25 11. Gripping tool according to claim 1, in which the coupling appliance is a  
driving feature (49), connected with the drive of the appliance for converting and/or  
transferring (42, 45) in a manner secured against rotation, with at least one working  
surface for a rotational drive appliance.

12. Gripping tool according to claim 1, in which the mounting appliance has a hollow mounting spigot (35) and the coupling appliance (49) is disposed in the mounting spigot or sticks out of it, and/or the appliance for indicating (50) is disposed in the mounting spigot (35) or sticks out of it.

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13. Gripping tool according to claim 12, in which the mounting spigot (35) on the outside has a connection part (36) of a detachable, positively fitting connection.

14. Gripping tool according to claim 13, in which the mounting spigot has a bayonet-type connection part (36).

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15. Gripping tool according to claim 12, in which the mounting spigot (35) has at least one cylinder part (35', 35'') and at least one conical base part (35''').

15 16. Gripping tool according to claim 1, on which a chip is disposed with data of the gripping tool (1), readable from the outside.

17. Dosage tool for automatic laboratory machines, with

- at least one piston-cylinder appliance (59, 60),
- 20 - an appliance for converting and/or transferring (42, 45) of movements, the power take-off of which is coupled with the piston-cylinder appliance (59, 60) in order to drive it,
- a coupling appliance (49) for detachable connection with a drive appliance (78) of a tool support (66) of an automatic laboratory machine, which is
- 25 coupled with the drive of the appliance for converting and/or transferring (42, 45) in order to drive it,
- a mounting appliance (35, 36) for detachable mounting of the dosage tool (52) on the tool support (66) of the automatic laboratory machine, when the

coupling appliance (49) is connected with the drive appliance (78) of the tool support (66).

- an appliance for indicating (50) the position of the piston (59) of the piston-cylinder appliance (59, 60), which is feelable by a sensor (84) of the tool support (66) while the dosage tool (52) is mounted on the tool support (66).

18. Dosage tool according to claim 17, in which the appliance for converting and/or transferring (42, 45) has an axially movable, threaded nut (42) secured against rotation, acting on the piston of the piston-cylinder appliance with a front side, and a spindle (45), screwable in the threaded nut (42) and connected with the coupling appliance in a manner secured against rotation.

19. Dosage tool according to claim 18, in which the appliance for indicating (50) is a pin, fixedly connected with the threaded nut (42).

20. Dosage tool according to claim 17, in which the coupling appliance is a driving feature (49), connected with the drive of the appliance for converting and/or transferring (42, 45) in a manner secured against rotation, with at least one working surface for a rotational drive appliance of the tool support (66).

21. Dosage tool according to claim 17, in which the mounting appliance (35, 36) has a hollow mounting spigot (35) and the coupling appliance (49) is disposed in the mounting spigot (35) or sticks out of it, and/or the appliance for indicating (50) is disposed in the mounting spigot (35) or sticks out of it.

22. Dosage tool according to claim 21, in which the mounting spigot (35) on the outside has a connection part (36) of a detachable, positively fitting connection.

23. Dosage tool according to claim 22, in which the mounting spigot (35) has a bayonet-type locking part (36).

24. Dosage tool according to claim 21, in which the mounting spigot (35) has at  
5 least one cylinder part (35', 35'') and at least one conical base part (35''').

25. Dosage tool according to claim 17, on which a chip is disposed with data of the dosage tool (52), readable from the outside.

10 26. Tool support for an automatic laboratory machine, particularly suited for supporting and moving of gripping tools (1) and dosage tools (52) according to claim 1, with

- a drive appliance (78) for driving of a gripping tool or of a dosage tool (1, 52) at option,
- 15 - a further coupling appliance (79) for connecting the drive appliance (78) with a coupling appliance (49) of a gripping tool or of a dosage tool (1, 52) at option,
- a further mounting appliance (70, 71) for mounting the mounting appliance (35, 36) of a gripping tool or of a dosage tool (1, 52) at option, while the  
20 coupling appliances (49, 79) of the tool support (66) and the gripping tool (1) or the dosage tool (52) are coupled with each other, and
- a control appliance for controlling the movements of a gripping tool (1) or of a dosage tool (52) at option.

25 27. Tool support according to claim 26 with a rotational drive appliance (80).

28. Tool support according to claim 27, in which the further coupling appliance (79) has at least one further working surface for the transmission of a rotational drive movement.

29. Tool support according to claim 26, in which the mounting appliance has an accommodation (70) for a mounting spigot (35) of a gripping- or dosage tool (1, 52), and the further coupling appliance (79) is associated to the accommodation (70), in  
5 order to couple in the coupling appliance (49) of the gripping- or dosage tool (1, 52) while the mounting spigot (35) is disposed in the accommodation (70).

30. Tool support according to claim 29, in which a further bayonet-type connection part (71) for detachable connection with a bayonet-type connection part  
10 (35, 36) of the mounting spigot (35) of a gripping- or dosage equipment (1, 52) is associated to the further accommodation (70).

31. Tool support according to claim 30, in which the further bayonet-type connection part (71) can be driven by a motor, and the control appliance controls the  
15 movements of the further bayonet-type connection part (71).

32. Tool support according to claims 26, in which a sensor (84) is associated to the accommodation (70) in order to feel an appliance for indicating (50) of a gripping- or dosage tool (1, 52), disposed in the accommodation (70) with the  
20 mounting spigot (35), and the sensor is connected with the control appliance, in order to control the movements, depending on the position of the gripping appliances (9, 10) or the piston (60).

33. Tool support according to claim 26, which has a further sensor (86) for  
25 feeling data of a gripping- or dosage tool (1, 52), which is connected with the control element in order to control the movements, depending of the data of the gripping tool (1) or the dosage tool (52) employed, respectively.

34. Tool support according to claim 26, with a displacement appliance facility for displacing the tool support along at least one and/or for at least one spatial axis, which displacement is controllable by the control appliance, in order to reach different vessel positions with the gripping tool (1), and different dosage positions  
5 with the dosage tool (52).

35. System for gripping and moving of vessels and/or dosage of samples with a gripping tool (1) according to claim 1, and/or a dosage tool (52) according to one of claims 17 to 25, and a tool support (66) according to one of claims 26 to 34.

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